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CENTRAL INTELLIGENCE AGENCY

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PROCESSING COPY 25X1

COUNTRY	East Germany	REPORT	
SUBJECT	Heinrich Hertz Institute: 1956 Preliminary Report on Field Intensity Recordings of Fixed Stations in the Ultra-Short-Wave Range	DATE DISTR.	1 MAY 1957
		NO. PAGES	2
		REQUIREMENT NO.	RD
DATE OF INFO.		REFERENCES	25X1
PLACE & DATE ACQ.			25X1

SOURCE EVALUATIONS ARE DEFINITIVE. APPRAISAL OF CONTENT IS TENTATIVE

"Field Intensity Recordings of Fixed Stations in the Ultra-Short-Wave Range"

1. The unexpectedly high field intensities observed at distances of over approximately 100 kilometers can no longer be explained by diffraction and refraction processes alone. Such propagations are often attributed to scattering processes on turbulences in the troposphere. Lately, the view that partial reflections in small layer inhomogeneities can produce these field intensities has often been stated. In this field, exact knowledge of this mechanism is desirable because, under certain conditions, local reception can be disturbed by transmitters located some distance away and because of the possibility of creating telecommunication channels over direct stretches without the use of relay stations. Further theoretical research at HHI on partial reflections revealed that these reflections can explain the observed facts qualitatively and quantitatively. In accordance with these facts, it can be assumed wrong to attribute this propagation solely to scattering processes. A publication on the results of the study will appear in the near future.

2. The determination of the degree to which one or the other mechanism, considering climatic conditions, is responsible for the phenomenon can only be considered after investigation of the precision structure of the atmosphere, in conjunction with wave propagation measurements and by means of special measuring methods in the centimeter range. For that reason, the development of a refractometer and the construction of a 10 centimeter measuring line were begun. Results obtained thus far indicate that data can be obtained in this manner. The research was therefore continued.

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By means of continuing recordings of fixed stations over distances of 190, 360 and 450 kilometers, further statistical material was collected and evaluated.

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